

U.S. Titanium

Piney River, Nelson County, Virginia

Superfund Program Site Fact Sheet

Type of Facility: Former Titanium Dioxide Manufacturing Plant

Contaminants: Iron Sulfate Acidic Discharge to Surface Water and Ground Water

Funding: Enforcement Financed

Site Description and History

The U.S. Titanium is a 50-acre Superfund site on the north side of the Piney River in Nelson County, Virginia. The site was a titanium dioxide manufacturing plant. The Virginia Chemical Corporation and the American Cyanamid Company produced titanium dioxide at the site between 1931 and 1971 by acidifying ilmenite, an ore containing iron and titanium. A by-product of this process is copperas (ferrous sulfate) which was piled along a hillside at the site. Many fish kills occurred in the Piney River from 1977 to 1981 because of acidic run off from copperas and acidic leachate. In 1980, copperas was removed from the hillside and buried on site. Site concerns included degradation of the Piney River water quality, vegetation destruction by acidic leachate, and ground water contamination.

The site was placed on the National Priorities List (NPL) on September 1, 1983, and the Record of Decision (ROD) was signed in November 1989. Cytec, formerly American Cyanamid Company, the principal responsible party, entered a Consent Decree for the Remedial Design and Remedial Action (RD/RA) in September 1990.

Seven areas were identified for treatment in the remedial investigation. These areas include: Area 1 copperas burial pit; Area 2 copperas piles; Area 3 former evaporation pond; Area 4 unreacted ore waste pile; Area 5 sedimentation ponds; Area 6 settling pond; and Area 7 surface water runoff.

RD was carried out from 1991 to 1994, and RA construction was started in September 1994 and completed in May 1997. The ferrous sulfate in Area 1 was excavated, neutralized, and deposited in Area 3. Drainage controls, stabilization, and revegetation were implemented in Areas 1-5. Acidified soil and sediment in Areas 2 and 7 were neutralized with lime. Area 6 required no action. A treatment system was constructed to collect and treat iron-bearing acidic ground water. French drains carry the water to a pump station, and the water is then pumped to a treatment plant for neutralization, settling, and discharge to the Piney River. Other remedial features included monitoring,

road maintenance, and deed and access restrictions. These strategies are deemed effective for reducing acidic and iron discharges, and inert material runoff to acceptable standards.



Threats and Contaminants

The ground water is contaminated with iron sulfate and is highly acidic because of former plant operations and the 1980 copperas burial. Acidity and elevated metal concentrations were found in both on-site seeps and off-site surface water. Ingestion or direct contact with contaminated ground water poses only a slight threat, since no off-site well contamination has been detected and municipal wells are up gradient from the site.

The acidity of the water and the waste seeps could be harmful and they could increase the solubility of metals that enter the water. The remedial construction has now intercepted the seeps and the acidic runoff to the Piney River. The periodic runoff of inert material that coated the bottom of the Piney River and decreased productivity of the river has also stopped

due to the site stabilization work.

Current Site Status (last update: March 2008)

In 2003, acidic soils were remediated along the right-of-way for a rails-to-trails hiking trail, which crosses the site, to protect against possible human exposure. An Explanation of Significant Differences was issued in September 2002 to document these changes to the site remediation and address long-term institutional control issues. The Third Modification to the Consent Decree was completed in September 2006 to document these changes.

The first Five-Year Review Report for the site was issued in April 1999. The second report was issued in March 2005 and noted that failures have occurred in the bioassay tests of the plant effluent and that the institutional controls had not yet been implemented. Cytec took samples for a macroinvertebrate study of the Piney River to confirm their contention that the discharge does not impact the macroinvertebrate community. The study was completed and the report finalized in 2005. The Virginia Department of Environmental Quality has reviewed the report and is in discussions with Cytec on possible future actions. The institutional controls were implemented and the restrictive covenants were recorded in Nelson County in December 2006.

The ground water treatment plant will continue to operate as long as the ground water collected remains acidic. Also, quarterly treatment plant effluent and ground water

sampling will continue. The third Five-Year Review Report for the site is scheduled for 2008.

Community Relations and Concerns

The Community Relations Plan was drafted in May 1989 and updated to include RD/RA in December 1991. A meeting was held in October 1991 to discuss the RD Work Plan. A media tour was held for a local television station in November 1992. A meeting was held on August 19, 1994, to discuss the final RD and schedule for cleanup. A media tour of the site was held on the same day. In October 1994, the Virginia Department of Environmental Quality (VDEQ) and the Environmental Protection Agency (EPA) also held a media tour on the site to show the RA work and answer questions from the press. On September 24, 1997, another media event was held at the site to publicize the completion of the remedial construction.

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